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ABSTRACT

The final report of an 18-month study on the undergraduate experience by the Massachusetts State Board of Regents of Higher Education is presented. The principal focus is academic matters, and one intention is to support requests for funding which, when combined with existing and reallocated resources, will form the fiscal basis for strengthening the undergraduate experience. Forty-four recommendations are made within 12 sections: access and admissions criteria (e.g. share information to improve student preparedness); assessing entry-level skills (e.g. mandatory assessment of students' basic skills); meeting the needs of students (e.g. required placement in developmental instruction); student support services (e.g. institutional data collection and analysis); standards for college-level work (e.g. courses to improve basic study skills); degree standards (e.g. standards for satisfactory academic progress); general education component (e.g. minimum requirements for general education); major and elective components (e.g. strengthening honors programs); assessing institutional outcomes (e.g. use of assessment to improve teaching and learning); professional development initiatives (e.g. state database and clearinghouse); technology in the classroom (e.g. improved access to equipment); and graduate teaching assistants (e.g. student access to faculty). Lists of members of the culminating study group, members of the planning committee, and members of the working groups are appended. Contains approximately 81 references. (SM)

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Board of Regents of Higher Education

Final Report

The Undergraduate Experience

June 1989

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MEMORANDUM

TO: The Board of Regents of Higher Education

FROM: Franklyn G. Jenifer, Chancellor

DATE: June 5, 1989

SUBJECT: Report of *The Undergraduate Experience*

In the fall of 1987 I devoted my *Year Ahead* message to the Board to the topic of undergraduate education. The major theme of that paper was that access to higher education, to which we have dedicated so much of our effort, is meaningless unless the educational experience itself is one of high quality. The message further called for a comprehensive review leading to specific recommendations to improve undergraduate education.

Targeting the quality of undergraduate education at our public colleges and universities as the primary agenda item for the subsequent year met with enthusiastic response from Board members. We set to work quickly, and with invaluable help from over 60 faculty and administrators embarked on the complex but rewarding task of identifying ways to advance the quality of education for the 167,000 undergraduate students and their successors at our community colleges, state colleges, and universities. The product of that effort is now before you as the report of *The Undergraduate Experience*, which upon your action will be the Board of Regents' first comprehensive policy statement on academic issues.

The time-span between my *Year Ahead* message and the delivery of *The Undergraduate Experience* report was eighteen months, a gestation period perhaps befitting the significance of the issues involved. Yet during this period numerous other topics have occupied our attention and drawn upon our energies--trust funds, tuition, governance, changes in leadership, and most of all, funding for public higher education. These dramatic and often troublesome issues are the kind that generate controversy and capture both our own and media interest. In this whirling, rapidly shifting environment in which so many players are involved, it is easy to forget--for a time--that the heart of our responsibility is the academic enterprise; that the constituency to whom we are most accountable is our students, most of whom are undergraduates; and that the fundamental undergraduate activity is teaching and learning. With this report, I return thankfully to our basic responsibility--the quality of our students' educational experiences.

Before highlighting the report's recommendations, I need to call to your attention three important points.

- First, the report, while wide-ranging in scope, nevertheless deals with some matters more extensively than others and omits some relevant matters altogether. For

practical reasons, student support services are mentioned but not addressed at length in the report; I intend to engage in a fuller review of student services at the earliest opportunity. Obviously related topics, including transfer of credit, the Regents' admissions policy, and the needs of disabled students, are being examined separately and reports are forthcoming. Finally, the issues surrounding English as a second language and adult basic education are sufficiently complex in their own right to warrant special study next year.

- Second, I particularly want to stress that our 28 public institutions that offer undergraduate instruction are already heavily invested in the concerns addressed in the report. Not one of our colleges and universities has neglected issues such as basic skills, general education, and faculty development. On the contrary, in every section of the report references may be found describing exemplary initiatives throughout the system. Understandably, individual institutions have made greater progress in some areas than others.

- Third, the goal of this effort is not to achieve uniformity in educational practice at all institutions. Rather, the objective is to state minimum standards and broad expectations and encourage each college and university to put its individual stamp of character on the mechanisms and specifics through which these recommendations are implemented, while remaining accountable to students, taxpayers, and boards of trustees as well as to the Board of Regents.

The 44 recommendations in the report share a single theme: that the students who enroll in our public colleges or universities in pursuit of undergraduate education deserve and should receive the best that our institutions can offer. All the recommendations are directed toward this objective.

The recommendations cover such areas as admissions and selection criteria, assessment of students' basic academic skills, curriculum, and professional development for faculty and administrators. A number of them are concerned with *minimum academic standards* for the undergraduate experience:

- *Assessment of Basic Academic Skills*. To ensure that students can succeed at college-level work, institutions will be required to assess the basic academic skills of their entering students in the areas of English composition, mathematics, and reading; provide appropriate developmental instruction for those who do not demonstrate the requisite skills; and subsequently, assess whether those students have attained the necessary skills to proceed with college-level instruction. Criteria are identified for college-level work in these three areas, and while institutions may choose different methodologies for the assessments, the methodologies selected must be comparable and compatible.

- *No Degree Credit for Developmental Work*. Developmental instruction should not receive credit toward the associate or baccalaureate degree.

- *Degree Standards*. Academic standards are set forth for associate and baccalaureate degrees, including the number of semester hours needed for degree completion, cumulative grade point average as well as average in the major, and the general education component.

- *Principles to Guide Review of General Education*. Expected learning outcomes are stated for the general education component of the undergraduate curriculum. The general education component should aim to develop in the student *ability* to:

reason abstractly and think critically and creatively;

use oral and written language effectively and critically as listener, reader, speaker, and writer;

reason quantitatively, using numerical data and symbolic representations as appropriate;

make aesthetic and ethical judgments;

learn independently and adapt to change;

and *knowledge* of:

the uses of languages and literatures in shaping and sustaining culture;

the history, traditions, and values of one's own and other cultures, and the role of the past in shaping the present and the future;

the nature, development, and role of social institutions;

the fine and performing arts;

the scientific method of creating new knowledge;

the modes of inquiry that characterize different disciplines and the connections among them; and

key technological applications of science.

- *Study of Foreign Language*. Institutions that do not have a foreign language requirement for the earning of a baccalaureate degree are urged to institute such a requirement.

- *Structure of the Baccalaureate Major*. The baccalaureate major should:

  Contain a central core of method and theory that serves as an introduction to the explanatory power of the discipline, provides a basis for subsequent work, and unites all students who join in the study in a shared understanding of its content, character, and aims; its history and contemporary problems; its social and economic implications; and its ethical and moral dimensions;

  Ensure that students experience the range of topics that the discipline addresses and the variety of analytical tools that it uses;

  Ensure that any prerequisites are intellectually defensible, clearly identified, and offered on a regular basis;

  Have a sequence of courses that presumes advancing sophistication;

  Include a culminating experience so that a student may develop and demonstrate a mature perspective of the major field of study;

Account for a reasonable proportion of the total requirements for the degree, usually not less than 25% nor more than 50% of the total number of credits required for graduation; and

Not be isolated from the other components of the curriculum. The identified general education abilities and knowledge should be incorporated into a student's major, as appropriate, and "across the curriculum" as well as interdisciplinary initiatives are strongly encouraged.

The report's remaining recommendations address numerous factors that help to make the undergraduate experience both meaningful and successful. Highlights are:

- *Admissions and Selection Policies.* So that applicants are fully informed, each public college and university is to publish a statement of its admissions policy, including any special criteria for admission to a particular program.

- *Information to Improve Student Preparedness.* The Board of Regents is to assist institutions in the development of a system to share information with sending institutions about the college performance of their graduates.

- *Orientation to the College Experience.* Each institution should offer solid orientation programs for beginning students to help them make the transition to the college experience.

- *Support Services.* The crucial role of appropriate academic and student support services is stressed.

- *Institutional Expectations.* Each institution is to identify the learning outcomes, in the form of knowledge and skills, that it associates with successful completion of the degree. Each institution, in relation to its mission, is to identify measures (such as performance on licensing examinations, transfer success, job placement, learning outcomes) to demonstrate how its students benefit from their undergraduate experience. Information acquired through assessments should be used for the improvement of teaching and learning.

- *Elective Component.* Institutions should safeguard students' opportunities to explore other areas of knowledge through access to free electives, and the institution's advising system should seek to preserve the free elective component. The faculty's essential role in guiding students throughout their undergraduate education is recognized.

- *Improved Access to Equipment.* Continued effort should be directed toward improving access by the campus community to computers and software, and to other needed equipment incorporating current technology.

- *Preparation and Supervision of Teaching Assistants.* Institutions have a responsibility to ensure that teaching assistants, as well as other non-regular instructional personnel, are capable of performing their assigned duties and receive necessary supervision. These individuals should receive appropriate training, including language and cultural orientation where needed.

A special section of the report is a call for a comprehensive program of professional development on each campus. The importance of professional development for faculty, professional staff, and

administrators cannot be stressed too strongly. Maintaining currency in the discipline, using relevant technology, and responsiveness to the institution's mission and clientele are among the goals of professional development. *The Undergraduate Experience* is not meant to take its place among those well-intentioned efforts whose pages turn yellow on office shelves while the system gets on with other, seemingly more pressing, tasks. The report is the basis for an action plan. Yet we must recognize that implementing the report's 44 recommendations will be far from simple. Practical realities teach us that not everything can be accomplished, or even begun, at once. Moreover, the recommendations vary among themselves on several dimensions: some, like the cluster of recommendations pertaining to basic skills assessment and required placement in developmental coursework, will be a mandate from the Board of Regents to be implemented according to a planned schedule; others, like those pertaining to degree standards, can begin to be implemented now; others, like the principles of general education, will involve faculty bodies in examining and refining the campus' general education program; and still others, like the study of foreign language and the requirements for the major, will ultimately be implemented by the specific decisions made by relevant campus groups. Several recommendations will require action and assistance at the level of the Board of Regents.

In spite of this variability, and to ensure that *The Undergraduate Experience* serves as a dynamic foundation for action, I propose the following schedule for implementing selected groups of recommendations:

1. Basic skills assessment and required placement in developmental instruction should be fully implemented during the next three years. In the first, 1989-1990, an expert statewide group will collect information about the types of assessment now in use or being considered at the colleges and universities, evaluate these approaches for comparability and potential for compatibility with the report's definitions of college-level in English composition, reading, and mathematics, and develop guidelines for the institutions' use. During the second year of this effort, 1990-1991, the basic skills assessment programs will be piloted and plans for required placement in developmental instruction will be completed. The third year, 1991-1992, will be the year in which these recommendations are fully implemented on all campuses.

2. Standards for associate and baccalaureate degrees pertaining to criteria for course credit, minima for required semester hours, cumulative grade point average, grade point average in the major, the general education component, maximum time to degree, and residency requirement should be fully implemented no later than the beginning of the academic year 1991-1992.

3. Institutional reviews of the general education component of the undergraduate curriculum, using the principles of educational outcomes for general education set forth in this report, should begin in 1989-1990 and be completed no later than the end of the academic year 1991-1992. Some colleges and universities are already so far along in the review and revision of general education programs that implementation in this area may be completed by spring 1990 or even sooner.

4. Institutional reviews of the baccalaureate major will be incorporated into the next five-year cycle of institutional program reviews, beginning fall 1989. The recommendations concerning the structure of the major, the culminating experience, integration of general education and the major, extent of majors, and expected time to completion of the degree are to be addressed as a component of the institutional review process and implemented according to

the faculty's best judgment, noting exceptions to the report's recommendations where appropriate.

5. Institutional plans for professional development and improvement of teaching, in keeping with the report's recommendations, should be completed not later than the end of the academic year 1990–1991. Some colleges and universities will be able to achieve this goal earlier.

The above schedule for implementation highlights most, but not all, of the report's recommendations and sets forth my expectations for the implementation phase of the undergraduate experience project. All of the recommendations, however, have my full support. I will bring a comprehensive implementation plan to the Board for information and review at the start of the next academic year. The plan will be developed in consultation with the Presidents/Chancellors and the chief academic officers.

I have been forcefully reminded by those involved with this major project that funding must be sought to support the timely and effective implementation of the report's recommendations. I intend to design future budget requests in light of these expectations. In any case, however, the implementation process must begin at once and proceed in an orderly fashion. It is with great satisfaction that I bring to you the results of this first phase of our program to ensure the quality of undergraduate education in the Commonwealth's public colleges and universities. It is with deep pleasure that I ask the Board of Regents to give pride of place to academic matters by accepting this report and my recommendations. In so doing, I note the reminder of those who contributed to the report that "the study of the undergraduate experience is a task which should never be thought of as concluded." However much we do and however much we accomplish, the goal of excellence in undergraduate education must always be in front of us, within our reach rather than within our grasp.

••

The Board of Regents, at its June 13, 1989 meeting, accepted *The Undergraduate Experience* report, commended the many individuals who participated in the project, endorsed the recommendations in this memorandum, and directed Chancellor Jenifer to implement the recommendations according to the schedule he had outlined.

MEMORANDUM

TO: Franklyn G. Jenifer
Chancellor

FROM: Norma S. Rees
Vice Chancellor
Academic and Student Affairs

DATE: June 1, 1989

RE: Transmittal of Report of *The Undergraduate Experience*

I take great pleasure in transmitting to you, on behalf of the Culminating Study Group, the report of *The Undergraduate Experience*.

This report is in response to the charge in your annual message of November, 1987 to affirm the commitment to the quality of undergraduate education in the Commonwealth's public colleges and universities and to identify steps to strengthen and enhance the undergraduate experience. During the ensuing 18 months, Board of Regents' staff was assisted in this major undertaking by the Culminating Study Group and five other groups, all of which were composed of faculty and academic administrators drawn from the public colleges and universities who gave generously of their time and expertise (see the report's appendices for the groups' membership). The final report's content reflects as well many of the suggestions and comments received from the public higher education community as a result of the circulation of draft documents during various stages of the project.

Among the responsibilities of the Culminating Study Group was the preparation of this unified report following a review of the work of its predecessor groups. The Culminating Study Group's final report contains 44 recommendations in such areas as access and admissions criteria, assessment of entry-level skills, standards for degrees and college-level work, curriculum, and professional development.

The Culminating Study Group asked that two points be highlighted in this transmittal. The first concerns the importance of adequate resources to support the objectives of the report. While the public colleges and universities are already heavily involved in programs to enhance the quality of undergraduate education, additional resources are needed to implement fully the report's recommendations. Indeed, one of the intended uses of this report is to support requests for funding which, when combined with existing and reallocated resources, will form the fiscal basis to strengthen the undergraduate experience.

The Group also wanted to note that, despite its issuance of a "final" report, the study of the undergraduate experience is a task which should never be thought of as concluded, since enhancing the quality of that experience requires continuous examination, discussion, refinement, and change.

I believe the attached report is an appropriate as well as a challenging response to your ambitious charge.

PREFACE

This final report is the result of an eighteen-month study of the undergraduate experience. In his 1987 annual message, Chancellor Franklyn Jenifer identified this task as the major initiative for 1988. The objectives of this effort are to affirm the commitment to the quality of undergraduate education in the Commonwealth's public colleges and universities and to identify steps to enhance and strengthen the undergraduate experience.

While the scope of this report is broad, its principal focus is academic matters. Accordingly, certain issues relevant to undergraduate education are not reflected or discussed in detail in the narrative or the recommendations. The Board of Regents' admissions criteria, transfer of credit policies, program review, and the needs of disabled students are being addressed by other groups and advisory bodies, whose reports will be issued shortly. Other issues, such as the full range of student services and the special subject of English as a Second Language, deserve concentrated attention at the earliest possible time.

A recurring concern through the course of the study has been the need for adequate resources to support the objectives of this report. While the public colleges and universities are already deeply involved in programs to enhance the quality of undergraduate education, additional resources are needed if all of the report's recommendations are to be fully implemented in a timely manner. Indeed, one of the intended uses of this report is to support requests for funding which, when combined with existing and reallocated resources, will form the fiscal basis for strengthening the undergraduate experience.

The charge for this study was ambitious and challenging; so too is this report. The resulting 44 recommendations span many components of the undergraduate experience. Not surprisingly, their level of specificity varies, and no attempt has been made in the report to rank them in priority. Further guidance will be provided institutions by an implementation plan to be developed in consultation with the colleges and universities following Board of Regents' action on the report.

INTRODUCTION

The Commonwealth's system of public higher education, which traces its roots back to the nation's first normal school, consists of 29 institutions. These colleges and universities were established to ensure educational opportunities of high quality that are geographically accessible, affordable, and convenient. Undergraduate education is offered at a wide array of institutions: 15 community colleges, seven comprehensive state colleges, two specialized colleges, and four university campuses.

As noted by illustrative examples in the pages that follow, excellence in undergraduate education is the subject of continuing discussion and ongoing effort at these institutions. They have individually sought to tackle such issues of current national interest as the nature and objectives of the general education component of the curriculum, student preparedness for college-level study, and professional development for faculty, administrators, and staff. This study of the undergraduate experience seeks to maximize the effectiveness of these activities by providing a statewide framework of principles and criteria that will inform and guide institutional activities directed at enhancing and strengthening the undergraduate experience.

In seeking to accomplish this study, a Planning Committee was formed in February, 1988, followed by the naming of four Working Groups: Academic Standards, Assessment, Curriculum, and Faculty Development and Improvement of Teaching. In December, 1988, an interim report, consisting of the individual reports of the Working Groups, was issued. The interim report, in turn, served as the basis for the preparation of this unified document by the the Culminating Study Group, the final committee established for this project. The Culminating Study Group was asked to identify any lacunae, overlap, and inconsistencies; to develop a draft report and recommendations for broad dissemination and discussion; and to forward a final report to the Chancellor in the spring of 1989. The Culminating Study Group, as well as the other groups involved with the project, consisted of faculty and academic administrators drawn from the public colleges and universities.

The scope of the project is rooted in Chancellor Jenifer's 1987 annual message, with the Planning Committee as well as the individual Working Groups providing further definition and focus. Accordingly, the Academic Standards Working Group considered the expectations of institutions for incoming and transfer students, and the relationship of these expectations to the admissions standards established for the baccalaureate institutions; the criteria for granting college-level credit for coursework; the effectiveness of present degree standards; and the effectiveness of student support services. The Assessment Working Group reviewed methods of institutional assessment of student progress and learning in the basic academic skills and of the freshman experience; institutional effectiveness in retaining students and in meeting the needs of underprepared students; and the impact of these assessments on teaching and learning. The Group's major emphasis on assessment issues during the early stages of a student's undergraduate experience was predicated on the need for a sound foundation upon which outcomes assessment for general education and the academic major could also be developed.

The Curriculum Working Group examined the role and nature of the general education component; the relationship between the undergraduate curriculum and the skills and knowledge that an institution affirms as basic to the undergraduate experience; the purpose of the major; and the appropriate balance between the major and the remainder of the curriculum. The Faculty Development and Improvement of Teaching Working Group reviewed professional development initiatives directed toward keeping faculty current in their field and improving teaching and learning, and studied the role of technology in the classroom and that of graduate teaching assistants.

During the course of the project, several opportunities for review and comment were provided. In October, 1988, the preliminary discussion drafts of the four Working Groups were shared with the

presidents, chancellors, and chief academic officers of the public colleges and universities. In December, 1988, the interim report was forwarded to these same individuals and to the members of the Working Groups and the Culminating Study Group. The circulation of the March, 1989 Draft Final Report of the Culminating Study Group to the above parties represented the third formal opportunity for review and comment. The comments received have helped to shape this final report.

ACCESS AND ADMISSIONS CRITERIA

Increased access to postsecondary education was a major development of the post-war period in the United States. Since 1963, enrollment in the nation's colleges and universities has grown from 4.8 million to 12.8 million. Even as opportunities to go on to college were expanding rapidly, however, on all sides concerns were expressed about the preparedness of students to do the work expected of them upon arrival at college. One approach has been to raise admission requirements in order to encourage students to do more rigorous work in high school and improve their chance of success in college. At the same time, higher education recognizes the importance of keeping access to higher education as broad as possible so that educational and economic disadvantage does not close the door to many groups. Whatever the institution's admissions policy, its students deserve to know what standards of academic progress they will be held to after enrollment.

Some states have reviewed admissions standards in relation to other crucial variables, such as the missions of their public institutions, the role of developmental, or remedial, education, and the problems associated with enrollment of able but underprepared students. Others have examined the quality of secondary education and its impact on the quality of the admissions pool within the state, and degree standards at the various levels and institutions within the state.

For example, the Commonwealth of Virginia in 1987 undertook a study of its admissions standards to see if qualified state residents were being rejected by public institutions because of competition from better qualified out-of-state students. It examined acceptance and enrollment rates at the several campuses and recommended that colleges publish their selection as well as their admissions criteria so that students may make informed decisions regarding where to apply for admission. (Admissions standards are minimum standards. An institution may admit all candidates who meet minimum standards, or may use another set of explicit or implicit selection criteria for admission.)

In *Access to Quality Undergraduate Education* (1985), the Southern Regional Education Board urged colleges to work closely with the high schools in defining and publicizing the courses and skills needed for college study, and in informing the high schools about the performance of their graduates. The Massachusetts School/College Collaborative Program, which included over 60 funded initiatives in fiscal 1988 and 21 in fiscal 1989, has demonstrated the many ways in which elementary and secondary schools and postsecondary institutions can work together to increase the number, diversity, and preparation of incoming college students. Some programs targeted minority students and sought to increase high school graduation rates, college attendance, and interest in engineering, science, and health related fields. Others were directed toward gifted and talented secondary school students, with the objectives of developing their full potential and smoothing their transition to college. Still others retrained teachers to use new approaches and materials or implement new technology in the schools.

In the Massachusetts public system of higher education, community colleges have traditionally been open-access institutions, while the remaining institutions use the Board of Regents' Admissions Standards Policy and, in some cases, impose still more rigorous admissions requirements. The Board's Admissions Standards became fully effective for students entering college in the 1987-88 academic year. Applicants to public four-year colleges must have completed 16 units of college preparatory coursework, including four years of English, three years of mathematics, two years of science, two years of social science and two years of a single foreign language as well as three elective units. The policy further provides that the four-year colleges use the Admissions Eligibility Index, which relates class rank and Scholastic Achievement Test (SAT) scores. Students with high class rank may qualify for admission despite a low SAT score. Conversely, a student who scores high on the SAT but has a low rank in class may also be eligible. The index requirements for the state colleges differ from those for the state universities. Some groups of applicants may be exempted from these requirements.

Students who anticipate enrollment at a public college or university in Massachusetts as first-time freshmen need to understand the institution's admissions criteria, while those seeking transfer opportunities need to be assured that their prior college-level work and their prospects for successful continued study will be evaluated equitably.

Recommendations

1. **Admissions and Selection Policies.** *Each public college and university shall publish in its informational literature an accurate and detailed statement of its admissions policies, including any institutional admission standards that go beyond the minimum standards established by the Board of Regents. Where an institution has special criteria for admission to a particular major or program, it must provide an accurate and detailed statement of such criteria in its informational literature.*

2. **Assistance to Non-Admitted Students.** *The Board of Regents should work with the campuses and secondary schools to explore ways to inform students who are not admitted to their first-choice institution about opportunities at other public colleges or universities.*

3. **Share Information to Improve Student Preparedness.** *The Board of Regents should assist institutions in the development of an organized system to share information with sending institutions about the college performance of their graduates. This information, in turn, will enable the sending institutions to better serve students in light of the expectations of receiving colleges and universities.*

4. **Strengthen Collaborative Programs with Secondary Schools.** *Colleges and universities should increase their efforts to work collaboratively with local schools and school districts to help ensure that students enter college with the requisite knowledge and skills.*

ASSESSING ENTRY-LEVEL SKILLS

In *All One System*, Harold Hodgkinson reported that the percentage of students who graduate from high school and thus are eligible to attend college has increased from 50% in 1946 to 73% in 1986. At the same time, the National Assessment of Educational Progress found that only 40% of 17-year-olds can read material written for high school students, and recent studies have confirmed that America's schoolchildren have serious deficiencies in the mathematics and science areas. It may therefore be concluded that some students who enter college today have not fully mastered high school work. Other studies have shown that about 50% of high school graduates go on to college, suggesting that while academic skills of high school students have declined, a larger proportion nevertheless graduate and go on to college. These trends may be responsible for the rapid growth of developmental education throughout the American higher education system.

Assessment at the point of entry has grown in favor as a method of helping institutions meet the changing needs of an increasingly diverse student body, especially underprepared students. In some states, standardized testing is used to supplement SAT or American College Testing (ACT) scores as part of the admissions process. In most states, however, assessment is used for placement and advising rather than for admissions, or gatekeeping.

In other states and in colleges and universities, assessment deals both with educational inputs—assessing the knowledge and skills students bring to a particular institution—and educational outcomes—learning and knowledge achieved as a result of the instruction provided. Although there is considerable debate about their usefulness, standardized tests are frequently relied on as the principal means of assessing the skills and knowledge of entering students.

As institutions begin to take a multidimensional approach to understanding the needs of their entering students and as they begin to view assessment of these students as key to their retention efforts, assessment can become a useful tool for gathering important data about students and helping to make programmatic and institutional decisions, including:

- effective diagnosis of students' academic abilities;
- appropriate placement in developmental learning environments;
- accommodation of freshmen who meet the requirements for advanced standing;
- organization of curriculum and teaching strategies based on the needs of entering students; and
- allocation of resources targeted to helping students improve their basic academic skills.

Some states have mandated basic skills assessment for all entering freshmen in state-supported institutions. Florida, for example, requires all prospective students at public institutions to take one of four approved standardized examinations. This model serves several objectives: (1) it identifies students needing developmental education; (2) it provides information to colleges about their students; and (3) it provides a report card on secondary schools. Other states, such as Connecticut, require their institutions to conduct student assessment for placement purposes. In these cases, the institutions have primary responsibility for developing and implementing basic skills assessment.

In New Jersey, assessment is used to help make decisions about student placement and remediation. All entering freshmen take the New Jersey College Basic Skills Placement Test. This examination,

developed in cooperation with the College Board and the Educational Testing Service, consists of an essay and four multiple-choice sections: elementary algebra, computation, reading comprehension, and sentence sense. The results are used for counseling and placement. Students who do not meet institutional standards are provided with developmental education, including coursework in those areas in which they lack sufficient skills. A post-test is required to determine whether they have achieved the proficiency needed for college-level work.

Virtually all public colleges and universities in Massachusetts have some type of basic skills assessment program in place, usually in the areas of reading, writing, and/or mathematics. The common method of assessment is formal, standardized testing and the results are used to advise students about appropriate courses. A variety of other assessment instruments are utilized, including institutionally-designed examinations. Currently, none of the institutions assesses students' basic skills prior to admission or to determine eligibility for admission. The process of identification and remediation differs, with the sharpest division occurring between community colleges on the one hand, and state colleges and universities on the other.

A 1985 telephone survey conducted by the Massachusetts Board of Regents revealed that all public higher education institutions in the Commonwealth offered some form of developmental instruction and most offered some form of placement testing to determine entering students' skill levels. However, no system exists for ensuring that admitted students with deficiencies in preparation receive necessary developmental instruction or that such instruction actually improves student performance.

The survey results showed that basic skills deficiencies are most acute for entering students at the community colleges. These institutions reported that between 25% and 75% of their entering students need developmental coursework. Placement in developmental courses or other appropriate learning activities was not required in all colleges, although in some instances students were required to enroll in developmental courses as a prerequisite to a particular program of study, such as pre-engineering or nursing.

The survey revealed that, in the state colleges and universities, SAT scores were the common standard used to assign freshmen to developmental courses (although cut-off scores vary). In addition, students accepted through special admissions or whose high school transcripts showed inconsistent performance might be required to enroll in developmental courses. A few colleges tied past academic performance to college admission by requiring successful participation in a summer program as a precondition of admission. Institutions with entry-level testing requirements for all students addressed only one substantive area. For example, one institution assessed the writing skills of all entering students but did not require placement in developmental writing courses. Another assessed all students in mathematics and also required mandatory placement in appropriate developmental instruction. A third institution assessed skills and knowledge in science and offered developmental instruction as a prerequisite for those planning to major in that area.

Students enrolled through the Division of Continuing Education have usually not been covered either by basic skills assessment programs or by mandatory placement. Review of recent campus five-year plans and discussions with campus personnel indicate, however, that the issue of requiring assessment of *all* entering students is a matter of lively discussion. One college, for instance, recently decided to require assessment and placement in developmental courses for all students who are in need of such academic work.

Recommendations

5. **Mandatory Assessment of Students' Basic Skills.** *Each public college and university shall assess, no later than the point of entry, the basic skills and competencies in English composition,*

mathematics, and reading of all first-time, degree-seeking undergraduate students enrolled in credit-bearing instruction (including continuing education students) unless current, valid information of this kind is otherwise available. Students should be restricted from college-level courses in related subject areas until they have demonstrated the required level of competency in that area. Once they have demonstrated college-level competency in a subject area such as mathematics, students may be permitted to move ahead in that area even if they have not reached college-level performance in other areas (i.e., English composition and reading). Institutions should encourage continuing education students to declare an intent to matriculate as early as possible in their course of study, before the accumulation of a substantial number of credits.

6. **Comparability and Compatibility of Entry-Level Assessment Methodologies.** *Institutions may choose significantly different methodologies for assessing entry-level skills. A statewide review group made up of educators with the requisite expertise from the Massachusetts public higher education system should be given the responsibility of developing a means of assuring the comparability of the results of the assessment methodologies used, and their compatibility with the definitions of college-level content in recommendations 17(a), (b), and (c) of this report.*

MEETING THE NEEDS OF STUDENTS

Once a student has been admitted to a college or university, the institution bears the responsibility of helping the student succeed. Of course, not every student will succeed no matter how great the institutional commitment. Nevertheless, to the degree that the admitted student is less than fully prepared to do college-level work, the institution should be prepared to offer that student assistance in overcoming academic deficiencies. Many colleges and universities, concerned about student retention and graduation rates, have abandoned the "sink-or-swim" philosophy and have adopted active intervention strategies. The first step is identifying areas and levels of deficiency, as noted in the preceding section. While understanding the characteristics of underprepared students is vital to the success of intervention strategies, research has shown how misleading are stereotyped accounts of this widely varying student population.

Traditionally, the academic community has defined academically underprepared students as those with distinctive characteristics that place them at a disadvantage in competition with other students who enter college with the skills necessary for academic success (Roueche, 1967, 1972; Roueche and Kirk, 1973; Moore, 1970, 1971, 1976; Kraetsch, 1980). The characteristics typically cited are erratic academic performance, low standardized test scores, low self-esteem, unclear goals, and low socioeconomic and/or minority group status.

Waterhouse (1978) described underprepared students as being unsure of themselves; needing experience of success, financial assistance, tutoring, and basic skill development; possessing minimal knowledge of career and education opportunities or the ability to take advantage of them; and needing to feel comfortable in the learning environment. Green (1977) is more specific, targeting minority groups in particular as including many underachievers who lack sufficient confidence and self-esteem to perform in college.

This frame of reference can lead one to believe that academically underprepared students are either members of a minority group or low-income students, as well as giving the impression that minority or low-income students are always academically underprepared. One reason for the narrow characterization is that minority and other non-traditional groups began to enter colleges and universities in significant numbers in the 1960s, and subsequent research in higher education has given a great deal of attention and visibility to this student population.

In fact, the pool of underprepared students is characterized by considerable variation. Recent research has found that a diverse population of students entering college is academically underprepared. Cross (1971; 1981) has identified what she terms "the new underprepared student." The academically underprepared students of the late 1970s and the 1980s include older women, war veterans, workers whose jobs have changed or have been eliminated, single parents, full-time workers, people who are attempting to change careers, immigrants whose first language is not English, and those who chose not to enter college immediately following high school. Many of these students balance work and familial responsibilities along with their academic studies. In her research Cross found that this group of students were not underachievers in high school, did not score low on standardized tests, and were not educationally disadvantaged. Cross concluded that there is little reason to believe that these students suffer the psychological maladies and low self-esteem and motivation those in the academic community typically associate with underprepared students. There are also students with upper division status who are academically underprepared, yet the dropout rates among these students have not received much attention. Because of the limited character of the population studied in the past, very little information is available about the nature of underpreparedness among these students.

Colleges and universities responded to the needs of the growing population of underprepared students by instituting two types of programs: personal/social counseling, and developmental instruction to

address deficiencies in basic academic skills. In the former category, special advising and tutoring programs were often directed largely at improving students' self-concepts and social development. While this professional counseling, which is distinct from faculty advising, is considered crucial to retention of underprepared and other high-risk students, the students themselves seek it as a last resort (Gordon and Hutson, 1971; Benedict, Apsler, and Morrison, 1977). The scant research on counseling effectiveness with high-risk students has led one researcher (Garni, 1980) to conclude:

> The importance of effective counseling center interventions for a mobile and fluctuating student community is clearly understood, yet the relationship between counseling factors and student attrition continues to be ignored. As a consequence, the potential retention function of counseling centers has not been fully used.

While assessment is fundamental to any developmental program, the literature does not suggest that completion of such a program guarantees student retention. On the average, no more than one-quarter of all students who withdraw from college leave because of major deficiencies in basic academic skills or native ability. There are many students for whom academic dismissal or withdrawal can be traced to absence of study skills and habits required for college work (Demitroff, 1974). Where the high school does not adequately prepare students for the more complex demands of college study, even the most capable student may find the adjustment difficult. Programs aimed at improving study skills as well as basic academic skills have proven effective in reducing the frequency of withdrawal for academically underprepared students.

Students vary, then, in the degree, type, and reason for their level of preparedness for college study. Nonetheless, every student admitted deserves the opportunity to make up for inadequate preparation and to develop the skills necessary to succeed at college-level work. Once accepted into an institution, every student should be assured that the institution will make available the necessary developmental instruction at the appropriate time in the student's undergraduate experience.

Recommendations

7. **Required Placement in Developmental Instruction.** *Students who do not demonstrate the necessary skills and competencies in English composition, mathematics, and reading for college-level work will be placed initially in appropriate developmental courses and given other appropriate developmental education experiences before being enrolled in related college-level courses requiring those skills and competencies.*

8. **Required Post-Assessment.** *Each institution will have an objective means of determining whether the student who has been required to enroll in developmental instruction has attained the necessary skills and competencies in relevant areas in order to proceed with college-level instruction.*

9. **Comparability and Compatibility of Post-Assessment Methodologies.** *As in the case of entry-level assessments of students' basic skills, post-assessments should be comparable and compatible with the definitions of college-level content in recommendations 17(a), (b), and (c) of this report. The statewide review group charged with overseeing the comparability and compatibility of entry-level assessments (recommendation 6 of this report) should likewise be charged with these responsibilities.*

10. **Support for Developmental Programs.** *The Board of Regents shall undertake systemwide planning to ensure that resources are available to support appropriate developmental programs. Institutions should see that faculty are rewarded for effort and excellence in developmental teaching and for creatively designing programs that provide effective developmental instruction.*

11. **Dissemination of Information on Developmental Efforts.** *The Board of Regents shall periodically collect information about developmental education efforts at the various public institutions and share that information across the system.*

STUDENT SUPPORT SERVICES

The National Institute of Education's 1984 report, *Involvement in Learning: Realizing the Potential of American Higher Education*, calls on colleges and universities to offer students from matriculation through graduation a systematic program of guidance and advisement, with full and continuing participation of student affairs personnel, peer counselors, faculty, and administrators. A study by Crockett in 1985 found that improved academic advising improved student retention. Good retention programs help students to clarify their educational and career goals and relate these goals to academic offerings. A strong faculty role in advising is essential to this effort. Effective in-service training for advisers, periodic evaluation of individual advisers, and appropriate rewards for faculty who excel at advising are needed. Successful academic support programs embody certain common necessary and fundamental characteristics, including:

- demystifying the college experience, or helping students know what will be expected of them and understand their own abilities and objectives;
- decoding the environment, or assisting students in dealing with the rules and regulations of college life; and
- diagnosing academic difficulties early, so that help can be given in a timely fashion.

The City University of New York, which tests all freshmen on basic skills, convened a university-wide task force on student retention and academic performance in 1984. It found that developmental courses contribute significantly to the likelihood that students who need them and master their content will remain in and graduate from college. Among the task force's recommendations for increasing retention were improved admissions procedures; intensive counseling programs; block-programs and paired courses for underprepared students; detection and dismissal of students who fail to complete developmental work after repeated attempts; early warning of students in academic difficulty; and on-line student information systems.

Other research has shown that substantive academic advising and orientation programs, sufficient depth and breadth in general education, instruction focused on relevant skill development, student-oriented goal statements and proficiency examinations, campus-centered environment during the first year, and evaluation of the institution's ability to increase student competence all contribute to improved retention. Faculty are important to any successful retention effort but their involvement should be seen as an integral component of their responsibility to students rather than as an individual voluntary effort.

Colleges and universities have had considerable success at improving student retention through programs designed specifically for entering students. Common characteristics of these focused initiatives include an intensive orientation component that continues throughout the freshman period and the provision of services to promote the social, personal and academic adjustment of new students. Special orientation programs for transfer students have likewise been found to be useful for this population.

The quality of the freshman experience is now widely recognized as crucial to a student's academic success. In 1986, the National Center for the Study of the Freshman Year Experience was established. This center, a research and service organization, publishes a newsletter highlighting examples of successful efforts in this area. A number of colleges, for example, require entering students to enroll in a seminar which addresses a wide range of academic and non-academic topics. Some colleges offer special orientation courses for freshmen who have not declared a major. This approach helps new students in becoming informed consumers and faculty in assisting students to select an appropriate academic path. Another college redesigned its freshman seminar to meet the unique circumstances of the adult learner.

Efforts such as these support the research of Kohen, Nestel, and Karnas (1976), which showed that as students advance from freshman status the likelihood of their completing a subsequent year of education generally increases. Pascarella and others (1981) concluded that "voluntary withdrawal is less a function of pre-involvement traits than post-enrollment experiences."

Massachusetts public colleges and universities are making significant efforts to reduce student attrition and, correspondingly, to increase student retention. For example, one state college has announced the goal of reducing freshman attrition rates from 24% to 18% by 1992-93 through improved testing, advising, and support services. Another has initiated an orientation program (which includes follow-up throughout the year by group leaders), instituted an elective freshman experience course, and targeted programs for students in academic difficulty. A community college has conducted limited studies of graduation rates, which were found to approximate 30% for incoming matriculated students. The rates varied greatly by program, reaching as high as 90% for some programs. These data allow the college to target retention efforts systematically. Another college has made retention one of its key priorities. It is including information on the factors that lead to student attrition in its new student goal information system which will track individual student goal changes longitudinally. This expanded data base will be used for early identification of students-at-risk, with faculty receiving the names of their at-risk advisees at critical points in the semester.

Recommendations

12. **Orientation to the College Experience.** *Each institution should assist students in making the transition to the college experience by offering solid orientation programs that directly address such topics as academic preparedness, adjustment difficulties, and unrealistic or uninformed expectations. Each institution should design and evaluate the effectiveness of programs to meet these objectives.*

13. **Appropriate Student Support Services.** *Each institution should provide appropriate student support services for all students and see that the institutional climate is welcoming and supportive. Institutions should capitalize on the richness of experiences brought to the campus by including all students in campus life and by providing them with opportunities for extracurricular participation.*

14. **Systemwide Review of Student Support Services.** *The Board of Regents staff shall review the level and appropriateness of student support services within the system and seek ways to strengthen this critical component.*

15. **Academic Support Services.** *All students who are admitted to an institution should be provided with the academic support services and learning resources that will maximize the likelihood of their success. Critical in this regard is the library, which plays a pivotal role in sustaining and promoting the academic and intellectual foundation of an institution.*

16. **Institutional Data Collection and Analysis.** *Each institution should collect and analyze data about student performance and progress. These findings should be used in preparing the institution's long-range plan.*

STANDARDS FOR COLLEGE-LEVEL WORK

The rapid growth in college enrollments and increasing concern about student preparedness have been accompanied by questions of standards for college-level work and what types of academic credit, if any, should be awarded for instruction in the basic skills. The National Institute of Education (1984) observed that, while colleges should offer developmental courses when necessary, they should also set standards and employ instructional techniques that will enable students to succeed in subsequent college-level work. The Southern Regional Education Board (1985) recommended statewide standards for placement in college courses creditable towards an undergraduate degree.

In 1986, the Minnesota Higher Education Coordinating Board issued the report of its Task Force on Definition of College-Level Skills. The task force was charged with specifying the knowledge, skills, and understandings in reading, writing, and mathematics that should become the base levels of competency to be recognized with degree credit from Minnesota postsecondary institutions. In each of the three basic skills areas, the sub-skills at the college and pre-college level were delineated. *The Chronicle of Higher Education*, in its September 1, 1988 Almanac, reported that 18 states prohibit the awarding of college credit for developmental education at all public colleges and universities, with one of these states limiting the ban to four-year institutions.

The absence of systemwide standards for college-level work and of policy regarding awarding credit for developmental education has resulted in a considerable variety of practice among Massachusetts' public institutions. In the area of credit for developmental instruction, for instance, some do not give credit at all, while others set a cap on the number of such credits that can be applied toward the degree. One community college, for example, has capped such credit at six, while another allows as many as 12 (out of a minimum of 60 credits needed for the degree). Some colleges grant institutional, but not degree, credit for developmental coursework.

At a minimum, standards for college-level work in the three recognized basic skills areas are needed. English composition, mathematics, and reading are fundamental to success in academic subjects generally. Instruction in subject matter areas builds on the requisite skills in these three areas, and students' potential for academic achievement should not be compromised by inadequate preparation.

The belief is often voiced that credit must be given for developmental work in order to preserve students' eligibility for financial aid. However, student eligibility for financial aid is determined, among other things, in reference to the college's policy of satisfactory academic progress. For developmental coursework to be eligible for financial aid, the student must make satisfactory academic progress, as defined by the institution, in an eligible program at the institution and that coursework must be part of an eligible postsecondary program. If a student is in compliance with the institution's satisfactory academic progress policy, the outside limit on the amount of developmental work that may be taken without jeopardizing eligibility for federal financial aid is the equivalent of one year of full-time study, which is interpreted as 30 semester hours, 45 quarter hours, or 900 clock hours. English as a Second Language does not count against these limits. Because it is the number of hours, not credits earned, that affects eligibility for financial aid, awarding no credit, reduced credit, or institutional credit only for developmental coursework need not significantly affect a student's eligibility for financial aid or deny access to underprepared students of limited financial means.

Recommendations

17. **Criteria for Granting Course Credit Toward the Degree.** *The Board of Regents shall establish the following systemwide criteria for granting course credit toward the associate or baccalaureate degree:*

(a) **English Composition:** *College-level English composition courses should involve the development of complex and abstract ideas for different writing situations and emphasize the different steps of the writing process leading to fluent, effective expression. Courses that are concerned primarily with grammar, usage, punctuation, or grammatical sentences and paragraphs should not receive credit toward the degree.*

(b) **Mathematics:** *College-level mathematics courses should build upon the competencies acquired during the equivalent of at least three years of high school algebra and geometry. Courses covering computational concepts only should not carry credit toward the degree. Courses designed to teach students how to apply mathematics to specific fields, such as those offered in community college occupational programs, may be offered for credit toward the degree to be earned in those programs but will not be considered equivalent to college-level mathematics for the purpose of transfer of credit to baccalaureate institutions.*

(c) **Reading:** *Reading assignments in courses carrying credit toward the degree should be college-level material. Courses dealing primarily with general reading skill, such as word identification, the ability to identify and comprehend the main and subordinate ideas, to use reference materials, to summarize the ideas in one's own words, and other technical aspects of reading should not receive credit toward the degree.*

18. **Basic Study Skills.** *Courses to improve students' basic study skills and work habits should not be offered for credit toward the degree.*

DEGREE STANDARDS

Recent national reports have called for colleges and universities to review their programs in light of their goals and standards, which should be rooted in institutional identity and educational purpose; to demonstrate effectiveness with regard to students, programs, and faculty; to agree upon and disseminate a statement of the knowledge, capacities, and skills that students must develop prior to graduation; and to take a firm stand on what they regard as essential knowledge.

A number of states have developed standards for degrees. New York, for example, distinguishes undergraduate degrees by the minimum amount of liberal arts core content required. This core content may not be directed toward specialized study or specific occupational or professional objectives. For associate and baccalaureate degrees in the Arts, three-fourths of the work must be in the liberal arts and sciences; for associate and baccalaureate degrees in the Sciences, one-half; for associate degrees in the Applied Sciences, one-third; and for baccalaureate degrees in the Fine Arts, one-fourth.

In Minnesota, a 1986 report on associate degree standards stipulated that degrees should be differentiated on the basis of program objectives as well as the amount and distribution of general education included in each type of degree. For example, the major objective of the Associate in Arts degree is to fulfill the first two years of a baccalaureate program and not to provide the technical preparation for entry into an occupation. Associate in Science degree programs are to provide the foundation for baccalaureate programs in science, agriculture, and engineering. Associate in Applied Science degree programs are intended to prepare people for employment and thus a majority of the coursework involved may be directly related to occupational skills.

The Board of Regents inherited degree standards from two of its predecessor boards. In 1975, the Massachusetts Board of Higher Education adopted guidelines for granting degrees in some areas of graduate study, and in the same year, the Massachusetts Board of Regional Community Colleges adopted standards for associate degrees. These latter standards stipulate that the Associate in Arts degree shall be given to students who have satisfactorily completed the requirements of an institution-designed and Board-approved program of collegiate level courses, at least 33 credits of which have been drawn from the field of Liberal Arts and Sciences. Twenty credits from the field of general education outside the field of specialization are required for the Associate in Science degree. For the Associate in Applied Science degree, with its strong emphasis on specialized courses and practicum, a minimum of 16 hours of general education is required. For the baccalaureate degree, no statewide standards exist. Complete and current degree standards are needed to ensure the integrity of undergraduate degrees awarded to students attending the Commonwealth's public colleges and universities.

Recommendations

19. **Degree Standards.** *The Board of Regents shall establish the following minimum standards for associate and baccalaureate degrees:*

a) **For the Associate in Applied Science degree:**

completion of a minimum of 60 semester hours, or the equivalent, of college-level work with a cumulative grade point average of 2.0 or higher at the institution granting the degree;

completion of at least 16 semester hours, or the equivalent, of general education consistent with recommendations 23 through 26 of this report; and

completion of a substantial amount of coursework at the institution awarding the degree;

b) **For the Associate in Science degree:**

completion of a minimum of 60 semester hours, or the equivalent, of college-level work with a cumulative grade point average of 2.0 or higher at the institution granting the degree;

completion of at least 20 semester hours, or the equivalent, of general education consistent with recommendations 23 through 26 of this report; and

completion of a substantial amount of coursework at the institution awarding the degree;

c) **For the Associate in Arts degree:**

completion of a minimum of 60 semester hours, or the equivalent, of college-level work with a cumulative grade point average of 2.0 or higher at the institution granting the degree;

completion of at least 33 semester hours, or the equivalent, of general education consistent with recommendations 23 through 26 of this report; and

completion of a substantial amount of coursework at the institution awarding the degree;

d) **For the baccalaureate degree:**

completion of a minimum of 120 semester hours, or the equivalent, of college-level work with a cumulative grade point average of 2.0 or higher at the institution granting the degree. Students must complete all degree requirements within ten years in order to be assured of the opportunity to fulfill the requirements in effect when they entered the institution.

completion of at least 36 semester hours, or the equivalent, of general education consistent with recommendations 23 through 26 of this report;

satisfactory completion of at least one college-level English course in expository writing;

completion of the institution's requirements for the major; and

completion at the institution awarding the degree of a minimum of 30 credits, a minimum of one-half of the credits in the major, and a minimum of 30 of the final 40 credits for the degree.

(e) A student must attain a minimum grade point average of 2.0 for coursework in the major. Individual institutions or programs may set higher requirements.

20. **Standards for Satisfactory Academic Progress.** *Each public college and university shall develop minimum standards for satisfactory academic progress toward the degree. These standards are to be reviewed and approved by the Board of Regents and are to be communicated to all applicants and enrolled students.*

21. **Institutional Expectations.** *Each institution shall identify the academic knowledge and skills that a student is expected to acquire before receiving a degree.*

GENERAL EDUCATION COMPONENT

The American Council on Education reported in 1988 that three-quarters of the nation's colleges and universities had either begun or completed projects to revise undergraduate education. A principal focus of these revisions is general education, one of the subjects of this decade's challenging national debate on the purposes and goals of education.

The presence of general education, which has been defined as "the cultivation of the knowledge, skills and attitudes that all of us use and live by during most of our lives" (Association of American Colleges, 1988), within the undergraduate curriculum is not new, nor is periodic debate on its role and nature. The current attention is prompted in part by the recognition that a major shift has taken place in the content and structure of undergraduate degree programs. During the 1960s and 1970s, many colleges and universities reduced course requirements that once served to provide common learning experiences for all students and moved in the direction of free electives or expanded opportunities for course work in the major.

Recent national reports provide telling descriptions of the changes that occurred in the undergraduate curriculum of many colleges and universities. For example, the 1985 report of the Association of American Colleges described the most extreme changes this way:

> The curriculum has given way to a marketplace philosophy: it is a supermarket where students are shoppers and professors are merchants of learning. Fads and fashions, the demands of popularity and success, enter where wisdom and experience should prevail. . . .
>
> The marketplace philosophy refuses to establish common expectations and norms. Another victim of this posture of irresponsibility is the general education of the American college undergraduate, the institutional course requirements outside the major. They lack a rationale and cohesion or, even worse, are almost lacking altogether. Electives are being used to fatten majors and diminish breadth. It is as if no one cared, so long as the store stays open.

Documentation supports this vivid—some would argue inflammatory—prose. The above report, for example, cited as evidence of the decline of the undergraduate degree: complaints from the business community of difficulty in recruiting literate college graduates; proliferation of developmental English programs in colleges and the corporate world; wide neglect of writing as an undergraduate experience, as an exploration of both communication and style; and grade inflation during a period of declining scores on Scholastic Aptitude and American College Tests and of increased pressures on faculty to ease students' entry into graduate schools.

Many colleges and universities retained their commitment to excellence in undergraduate education even as others substituted the "market philosophy" as a different approach to liberal education. Following the numerous reports about the state of postsecondary education that were published in the last decade, however, the academic community's response to the criticisms was swift. Colleges and universities accepted the challenge, revisiting the undergraduate curriculum, especially the general education component, from the standpoint of their expectations for graduates.

The task is not an easy one. A comparative analysis of five recent national reports dealing with undergraduate education concluded: "All of the reports generally concur that the undergraduate curriculum needs to be re-examined, but the intended purpose and outcomes of such activity vary from one report to another" (C. Boyer, 1985). This lack of consensus reflects not only the varied authorship

and focus of the five reports, but more importantly, the very complexity and diversity which so characterize and distinguish American higher education. While national reports may capture the attention of the academic enterprise as a whole, inevitably the tasks of articulating educational goals and reviewing and revising the curriculum are local ones, and must be performed simultaneously on campuses everywhere.

Not surprisingly, there is no broadly accepted definition of general education. Ernest Boyer (1987) observed: "General Education is *not* a single set of courses. It is a program with a clear objective, one that can be achieved in a variety of ways. And while there may be great flexibility in the process, it is the clarity of purpose that is crucial." As a result, many commentators have addressed not what general education is but what it should do. The following characteristics of general education have been identified:

It provides an introduction to the cultural uses of language, literature, and historical awareness; to social institutions, nature, and quantitative analysis; and to the arts as an expression of human aesthetic creativity. It also introduces the importance of values and provides insights into western and non-western cultural traditions.

- It introduces various methodologies employed in the development and creation of knowledge.
- It emphasizes integration and synthesis of different disciplines.
- It stresses critical thinking and the search for meaning.
- It is not solely the product of the first two years of college, but rather a consistently enriched sequence of experiences to be developed over the full four years of the baccalaureate experience and beyond.

Curricular review and revision, among the principal responsibilities of faculty and academic administrators, are complex and time-consuming activities. This is especially true in the case of the general education component, where multiple disciplines are involved. A report on efforts to improve general education at some of the nation's institutions (Heller, 1988) identified the following issues which need to be resolved:

- Balancing general education and the needs of individual schools and departments, especially with regard to professional programs whose curricula are strictly guided by accrediting agencies;
- Finding coherence without threatening departments, which believe they will lose students and, consequently, money and power;
- Finding and rewarding faculty members interested in teaching students who may not go on to major in a given field; and
- Developing courses that work in sequence and are linked, given space and time constraints and students' desire to get their general education "out of the way" early.

Several new themes have emerged in the current national dialogue about the role and nature of general education:

- General education is more than just the number and distribution of credit hours required and that its goals need to be identified clearly and integrated throughout a

student's academic program. For example, attention has been given to: (a) the identification of specific goals, skills, or competencies that a student should attain during the course of an undergraduate education; and (b) the development of "across the curriculum" initiatives in areas such as writing, reading, oral communication, and multicultural and global perspectives.

- General education is a major vehicle for preparing students to live in a global economy and society, and to better understand and survive in a world affected daily by technological and social changes.

- "Front-loading" of general education in a student's first year(s) of study, large class sizes, and frequent faculty preference for teaching advanced courses in the major all serve to weaken the renewed interest in the importance and value of general education and threaten the realization of its purposes. These issues are linked as well to the developing concept of the importance of the freshman experience in helping students make the transition to the collegiate environment and retaining them through completion of their educational objectives.

In 1982, prior to the flurry of national reports, the Massachusetts Board of Regents in its *Long Range Plan for Public Higher Education* affirmed the need to ground all undergraduate programs on a solid basis of general education:

> A strong liberal arts distribution, comprising mathematics and sciences, the humanities and social sciences must serve as the core of academic programs. By increasing their knowledge of this complex world and by teaching critical thinking skills such studies equip graduates to lead lives of initiative, imagination and responsibility and thus make the best investment in the future.

Within the Commonwealth's public colleges and universities, general education has been an ongoing subject of review and is currently undergoing increased scrutiny. Some institutions are in the process of planning or completing reviews, while others are introducing changes following years of study. Space does not permit a comprehensive overview of campus initiatives, but several salient examples may serve to illustrate the strength and diversity of this effort:

- A state college recently completed a two-year review and revision process and has begun a multi-year plan of implementation. This institution maintained a required minimum 60 to 64 credit hour general education component for all baccalaureate programs throughout the 1970s and 1980s. A desire to review the long-standing distribution requirements and concern about cultural cohesion and the meaning of the baccalaureate degree as represented by the general education portion of the curriculum prompted the review effort. The resulting product, which will be fully implemented by the mid-1990s, retains the same minimum range of credit hours but includes a Freshman Foundation Year emphasizing common themes and a mode-of-inquiry approach; an area requirement which mandates both breadth and depth and distributes general education coursework over four years; the establishment of criteria for all general education courses; and required interdisciplinary and multicultural studies.

- A university is in the process of implementing a revised general education component following several years of study. The faculty's major concern with the former system of distribution requirements was the lack of coherence, clear goals, objectives, and rationales for what was considered to be general education. The

review revealed that lack of clarity exacerbated student advising problems and led to a proliferation of courses that could be used to fulfill the requirements. The revised general education component consists of four principal divisions, each with specific requirements: the Social World, Biological and Physical World, Analytic Reasoning, and Writing. There is also an Experimental/Interdisciplinary category to provide an incentive and structure for faculty to develop alternative curricular approaches to general education. A committee structure has been established to review general education course proposals and to conduct periodic review of existing general education courses.

- A community college's general education revision is scheduled for implementation in Fiscal Year 1990. Elements of this revision include requirements for all degree students to take a two-course sequence in English and a two-course sequence in history. Additional distribution requirements relate to the arts and humanities, behavioral and social sciences, mathematics, and science. A "writing across the disciplines" component is currently being implemented.

- Another community college recently adopted a core curriculum which calls for broad distribution requirements; mandatory assignment to developmental courses for students who score below acceptable levels on entering placement tests; development of learning outcomes in the form of skills and competencies in broad academic areas and individual courses; and the incorporation of writing, reading, and oral communication skills across the curriculum.

The level of activity taking place at the public colleges and universities with respect to general education is highly gratifying. General education review efforts have in common the conviction that: (1) every graduate should be broadly educated as well as prepared in a particular academic specialty or discipline; (2) students need guidance in achieving this goal; and (3) faculty have an obligation to direct students toward the knowledge, intellectual skills, and habits of thought which characterize educated individuals. General education cannot be defined solely by a core curriculum and/or course distribution requirements, but rather consists of the sum total of educational activities in which students engage in the pursuit of the knowledge, skills, and competencies which should be attained in the course of an undergraduate education. Accordingly, general education should be spread throughout the undergraduate experience.

A notable concern is the decline in required foreign language study, especially when the need for an understanding of other peoples and countries grows daily in today's increasingly interdependent and globally competitive world. (In 1966, nearly 90% of all colleges and universities in the United States required foreign language study; in 1984 that number had declined to less than 50%.) Several Massachusetts public institutions have recently reinstated a foreign language requirement.

General education has often been the stepchild of the undergraduate curriculum. The rhetoric in favor of a viable undergraduate general education component can falter when the campus reward structure stresses accomplishments in the major discipline and where accrediting associations exercise a strong influence for expanding the content of professional programs.

Recommendations

22. **Importance of General Education.** ***The general education component of the curriculum must be viewed as a major contribution to the goals of undergraduate education at all colleges and universities, and therefore essential to fulfillment of their mission. Accordingly, institutions should nuture general education and give it the status and recognition it deserves.***

23. **Minimum Requirements for General Education.** *The general education component of undergraduate degree programs should include a balance of required study and/or restricted electives in the liberal arts and sciences in such disciplines as the humanities, arts, natural and physical sciences, mathematics, and social sciences. This component should account for* at least *16 semester hours, or the equivalent, for the Associate in Applied Science degree; 20 semester hours, or the equivalent, for the Associate in Science degree; 33 semester hours, or the equivalent, for the Associate in Arts degree; and 36 credits, or the equivalent, for a baccalaureate degree (see recommendations 19 [a] through [d] of this report). These are the lowest acceptable proportions and institutions are strongly encouraged to exceed them. In addition, an institution's requirements should not preclude opportunities for experimental curricula and honors programs.*

24. **Principles to Guide Continuing Review of General Education.** *Each institution should review the general education component of its undergraduate curriculum and specify expected outcomes, using the following set of principles as a guide and basis of reference. The institution's general education requirements should be revised as needed, keeping in mind the level and scope of student attainment of abilities and knowledge that the institution determines to be appropriate to its mission and the degrees it offers.*

The general education component of the undergraduate curriculum should aim to develop in the student ability to:

reason abstractly and think critically and creatively;

use oral and written language effectively and critically as listener, reader, speaker, and writer;

reason quantitatively, using numerical data and symbolic representations as appropriate;

make aesthetic and ethical judgments; and

learn independently and adapt to change;

and knowledge of:

the uses of languages and literatures in shaping and sustaining culture;

the history, traditions, and values of one's own and other cultures, and the role of the past in shaping the present and the future;

the nature, development, and role of social institutions;

the fine and performing arts;

the scientific method of creating new knowledge;

the modes of inquiry that characterize different disciplines and the connections among them; and

key technological applications of the sciences.

25. **General Education and Integrated Learning.** *Since general education is defined more by its goals than by a set of courses, institutions should integrate their general education component with the student's entire program of study.*

26. **Faculty Involvement in General Education.** *An institution's faculty as a whole should be involved not only in designing the general education component but also in subsequent instructional activities for that component.*

27. **Study of Foreign Language.**

    a. *Those four-year public colleges and universities that do not require the study of, or demonstrated competence in, a foreign language for the earning of a baccalaureate degree are urged to institute such a requirement.*

    b. *Students who have not completed two years of study of a foreign language in high school who are admitted to the four-year public colleges and universities should complete the equivalent study of, or demonstrated competence in, a foreign language before receiving the baccalaureate degree.*

THE MAJOR AND ELECTIVE COMPONENTS

The prevailing format of today's undergraduate programming consists of three basic and essential elements which, in a strong curriculum, complement and strengthen one another: general education, the major, and electives. This section addresses the latter two components.

The undergraduate major—or study in depth of the subject, academic discipline, or career specialty in which a student concentrates—became a feature of the nation's curriculum in the early twentieth century. The emergence of the American university in the late nineteenth century triggered an explosion of new subjects, courses, programs, and degrees. The major, along with distribution and general education requirements, and comprehensive examinations, emerged as tools to provide coherence and cohesion to a curriculum in the throes of responding to an expanding base of knowledge.

Today, the major has assumed a dominant role in the undergraduate curriculum. In large measure, this development is the response of colleges and universities to student demands for "career-oriented" education. Over recent decades, especially, colleges have introduced a host of increasingly specialized majors, particularly in career and technical fields. Many also have modified curricular requirements to allow students additional opportunity to take coursework in the major. Since the dominance of the major in the undergraduate curriculum came at the expense of the general education and elective components, it is not surprising that the renewed interest in general education has been accompanied by a corresponding revisiting of the major's role and purpose.

The Carnegie Foundation for the Advancement of Teaching, in its *Missions of the College Curriculum: A Contemporary Review with Suggestions* (1977), identified the following principal concerns about the major:

- The major is "too oppressive," because it takes too much of a student's time. In some cases the situation is exacerbated because students use the elective component to intensify specialization beyond that which is required for graduation.
- The major varies greatly in quality and substance. It may be simply a collection of courses lacking in depth or cohesion, or a specified number of required courses or credits without reference to content. The major may also be too narrow in its conception, lacking sufficient breadth or depth to challenge and educate students.
- Emphasis on the major leads to the neglect of courses designed and provided for non-majors. These courses frequently are viewed as having low priority.

This review noted that the average share of the curriculum devoted to the major—between 30% and 40%—seemed not unreasonable. It suggested that departments that impose requirements for the major less than 25% or more than 50% of the total number of credits required for graduation should be challenged to justify the content of such levels of concentration.

Ernest Boyer (1987) argued that the special task of the undergraduate college is to relate the values of liberal learning to vocation and proposed the "enriched major" as a centerpiece of the undergraduate experience:

> By an *enriched major* we mean encouraging students not only to explore a field in depth, but also to help them put their field of special study in perspective. The major, as it is enriched, will respond to three essential questions: What is the history and tradition of the field to be examined? What are the social and economic implications to be understood? What are the ethical and moral issues to be confronted?

Boyer saw the major and general education components of the baccalaureate curriculum not as competitors but as intertwined elements:

> Through such a curriculum the student can move from depth to breadth as departments put the specialty in larger context. If a major is so narrow and so technical that it *cannot* be discussed in terms of its historical and social implications, if the work in the proposed field of study cannot be a broadening experience, then the department is offering mere technical training that belongs in a trade school, not on a college campus, where the goal is liberal learning.

When utilized properly, the third element of the undergraduate curriculum, the elective component, has its own unique contribution to the undergraduate experience. The purpose of this component is to encourage students to sample different subjects during their undergraduate education. In setting aside part of the curriculum for students to use as they choose, a college provides students with the opportunity to explore its range of intellectual offerings, sample subjects that may not be covered in general education but might be interesting to pursue either as majors or minors, acquire skills that might not be possible otherwise, and satisfy curiosity about unfamiliar subjects.

Recommendations

28. **Structure of the Baccalaureate Major.** *The structure of the baccalaureate major should:*

> *Contain a central core of method and theory that serves as an introduction to the explanatory power of the discipline, provides a basis for subsequent work, and unites all students who join in the study in a shared understanding of its content, character, and aims; its history and contemporary problems; its social and economic implications; and its ethical and moral dimensions;*
>
> *Ensure that students experience the range of topics that the discipline addresses and the variety of analytical tools that it uses;*
>
> *Ensure that any prerequisites are intellectually defensible, clearly identified, and offered on a regular basis; and*
>
> *Have a sequence of courses that presumes advancing sophistication.*

29. **Culminating Experience.** *An undergraduate education is more than the sum of its parts or the number of credits required for graduation. For the baccalaureate degree, it is desirable that the student's mastery of the complexity of study in a major be demonstrable through some type of culminating experience, such as a project, thesis, comprehensive exam, seminar, or internship. Institutions are encouraged to incorporate such an experience in their baccalaureate programs.*

30. **Relationship of General Education and Major Components.** *The major, while defined by its own special characteristics, should not be isolated from the other components of the undergraduate curriculum. The identified general education abilities and knowledge should be incorporated into a student's major, as appropriate, and "across the curriculum" as well as interdisciplinary initiatives are strongly encouraged.*

31. **Completion of Baccalaureate Degree.** *The baccalaureate degree program (including electives, general education, the major, and prerequisites) should be designed so that the student can complete all requirements in four years of full-time equivalent study, exclusive of developmental education and conditioned upon satisfactory academic progress. Exceptions should be few and*

individually justified, and the relationship of any work beyond the fourth year to graduate study should be described.

32. **Extent of Majors.** *Majors accounting for less than 25% or more than 50% of the total number of credits required for graduation should be individually justified. For the purposes of this accounting, a major consists of all the courses in the major department and related departments required for the major but does not include general education, free electives, and prerequisites.*

33. **Elective Component.** *Institutions should safeguard students' opportunities to explore other areas of knowledge through access to free electives, and the institution's advising system should seek to preserve the free elective component. The faculty's essential role in guiding students throughout their undergraduate education should be recognized.*

34. **Honors Programs.** *Institutions should consider strengthening existing honors programs or instituting such programs for students with advanced academic achievement or ability. Support services responsive to the needs of these students should also be provided.*

ASSESSING INSTITUTIONAL OUTCOMES

Benchmarks of Achievement

Among any group of entering college students, the range of educational or occupational intentions is varied. Not all intentions or goals are clearly held or expressed, nor when clearly held are they always compatible with the educational mission of the institution. Individuals may enter college with educational goals that are more limited or more extensive than those of the institution. Students may, for example, attend the institution to accumulate credits for occupational certification or job promotion. Part-time working students may seek a specific, rather than general, set of skills. For these students, as for others, completion of a degree program may not be the desired end. Short-term attendance may also be sufficient for individuals whose educational goals go beyond those the institution provides. For example, some students enter community college with the intention of transferring to other institutions to complete their studies. For those students, entry to community college is a means to educational ends whose attainment requires transfer.

Accordingly, it is to be expected that some students will leave the institution prior to completing a degree, because they have in fact accomplished what they came to the institution to do. Labeling such individuals as "dropouts" and classifying them as "failures" are inaccurate and misleading. It is inaccurate because such a definition misrepresents students' intentions, and misleading because it distorts the meaning they attach to their educational accomplishments. Some of the very programs designed to serve individual needs and interests are short-term and targeted, and their completion should be identified as successes for both student and institution.

Attempts to redefine student success would be simpler if students always entered college with clearly defined goals. According to Sprandel (1985), however, many students begin their college careers with only the vaguest notions of why they are there. For recent high school graduates, the process of deciding to continue their education and selecting a particular college may be more haphazard than planned. Both recent high school graduates and older students returning or entering college may base decisions on very limited information. Students tend to be uninformed about the requirements for entering a particular profession. It is not surprising that, early in their college experience, many students question their reasons for being in college or in a particular institution. The process of goal clarification that occurs during college will invariably lead some students to withdraw from college or transfer to other programs or institutions. One community college in Massachusetts has already begun to attempt to track such information by requesting that applicants identify their academic goals on the admissions form.

Assessing Undergraduate Education

Of all the recent national reports on undergraduate education, that of the National Institute of Education (1984) is the most straightforward in calling for the assessment of outcomes. The call for assessment serves as a catalyst for new and varied methods of evaluating program and institutional effectiveness as well as student performance.

In general, those institutions that assess student outcomes focus their attention on four areas: (1) college-level competencies such as writing, mathematics, and thinking; (2) general education, or "what every college student should know;" (3) knowledge in the student's major field of study; and (4) student satisfaction with the services provided by the institution, specific teaching and learning experiences in the classes taken, and time spent. The first issue was addressed elsewhere in this report. The other three merit attention here.

Astin (1985) and others have argued that assessment should emphasize the institution's success in changing students, a "value-added" approach. The first step is to reach agreement on "what students should know and be able to do," or the goals of undergraduate education. Value-added assessment examines changes in students' performance over time. Students' skills and knowledge are assessed at point of entry and then re-assessed following the completion of appropriate courses or experiences. Differences between the initial and subsequent measures are then used as evidence of institutional impact. Changes in student performance are assumed to reflect the value added by the academic program and the institution. The best known illustration of this approach is that of Northeast Missouri State University, which has employed such a system since 1974.

Other institutions, most notably Alverno College, have designed their curriculum to help each student demonstrate competence in selected areas. Alverno's approach (Mentkowski and Loacker, 1985) stresses student competence as the centerpiece of outcomes assessment. The unique character of this approach is the way assessment of student outcomes in eight ability dimensions (e.g., problem solving, aesthetic response, taking environmental responsibility) is embedded in the curriculum and intimately connected to curriculum-design issues.

Statewide approaches to assessment focus on either student or institutional performance or both. The City University of New York uses the Freshmen Skills Assessment Program to ensure reading, writing, and mathematics proficiencies. Since 1973, Georgia has required students to pass a Regents examination in order to graduate. Students first take it in their sophomore year and are required to retake it until they pass. Florida's College Level Academic Skills Test requires students to present passing scores before receiving an associate degree or enrolling in upper division courses. Tennessee's approach to assessment links state funding to demonstrated improvements in undergraduate education, rewarding institutions for student performance in general education and in the major field and for student satisfaction with the undergraduate experience. Some states rely on the results of Graduate Record Examinations and pass rates on professional examinations as indicators of whether undergraduate education has achieved its objectives.

A few Massachusetts public colleges and universities measure educational outcomes, relying largely on standardized testing to do so. One university requires students to pass a writing proficiency examination prior to the junior year. In another institution, students are required to demonstrate competence in four areas prior to graduation. As part of a three-year grant, a community college is working with its faculty to identify and establish college outcomes. Faculty meet weekly and recently participated in an exchange program with Alverno College. As colleges and universities in Massachusetts re-examine their undergraduate curricula, they may decide to incorporate outcomes assessment.

A relevant example of this move is City University of New York's Lehman College assessment program designed to determine the effectiveness of its "new" curriculum in general education/distribution requirements. The program includes a locally-designed test and a portfolio of essays written in different courses on a wide range of subjects. Lehman's assessment efforts address the following questions: Is the new curriculum accomplishing its intended purpose? What are its strengths? Its shortcomings? What adjustments might be recommended to improved it? While its too early to measure the impact of this assessment program, the initiative will provide valuable feedback to the college.

Assessing Learning Outcomes in Order to Improve Teaching and Learning

Some statewide and institutional initiatives overlook the benefits assessment can provide to the areas of teaching and learning. Standardized testing programs that are limited to measuring the acquisition of facts, for example, may be inadequate to reflect either the institution's mission or the academic department's goals, and may have little effect on student learning. Assessment centered on the teaching

and learning process, in contrast, is a multidimensional process of judging the individual in action. Embedded in this definition are three assumptions about learning that emphasize active development of the learner (Loacker, Cromwell, and O'Brien, 1987). One is that learning involves making an action out of knowledge—using knowledge to think, judge, decide, discover, interact, and create. Another is that an educator's best means of judging how well a learner has developed expected abilities is to examine corresponding behavior—thinking behavior, writing behavior, inquiry behavior, or appreciating behavior. The third assumption is that learning increases, even in its serendipitous aspects, when learners have a sense of what they are setting out to learn, a statement of explicit standards they must meet, and a way of seeing what they have learned.

Assessment becomes a meaningful way to expand learning when it includes multidimensional sampling of students' abilities in action, observation, and judgment. In a study at Harvard University, undergraduates who took the introductory economics course were tested a year later to discover what they remembered. The results showed that students had forgotten most of the terms and nomenclature but still understood the concepts and methods of analysis. A survey of students also revealed that they spent little time applying what they learned by reading articles about economic issues in magazines and newspapers. On the basis of these results course materials were revised to emphasize concepts and to weed out less important items of nomenclature and terminology.

The above examples are suggestive if not definitive, and were persuasive enough to produce changes in teaching methods. In any case, motivation for such changes rarely comes solely from the results of standardized tests, even those purporting to measure the analytic ability and application of content. Curricular change in the Harvard examples came as a result of faculty recognition that their course content objectives were not fulfilled. Assessment of learning calls forth from faculty their keenest powers of observation of student work.

Faculty must be at the center of any educational assessment process. Faculty know what they expect in student performance. Assessment of student learning requires them to make their criteria explicit and public. In doing so, faculty refine their understanding of expected abilities, clarify for their colleagues the basis of their judgment, and enable students to understand what performance is required.

In the Alverno College approach mentioned earlier, faculty defined eight competencies and measured outcomes at six different levels. The college found that early in a student's academic experience, explicit criteria and performance standards are important. After a semester or two, students begin to cluster the criteria they had formerly perceived as discrete steps or directions; for example, they recognize that making inferences and supporting them with data are not complete steps in themselves but are part of the ability to think critically. Students at more advanced stages of education begin to internalize the criteria and use them to guide further learning.

For assessment to inform learning, feedback is critical: feedback to the student on his or her performance and understanding of the content, and feedback to the teacher on his or her ability to communicate, encourage thinking, and master concepts. To illustrate, the University of Missouri—Kansas City has developed a successful program of student academic support. The Supplemental Instruction (SI) model targets high risk courses—those traditionally difficult, entry-level courses where the rate of student failure is high. Included are courses in the social sciences, humanities, business, and biological and physical sciences. Under SI, additional class sessions, usually taught by upper division students, are offered. These sessions cover concepts and knowledge previously identified as having presented difficulties for students. While the initial emphasis was on improved student achievement, other institutions that have adapted this model also use the information to provide feedback to instructors.

One state college in Massachusetts has adapted SI as a tool for modifying how courses are taught. Participating faculty meet as a group on a regular basis and class sessions are taped. Feedback comes

from peers, course tutors, and videotapes. As a result of this program the college faculty have reorganized several courses and plan to continue with SI and review other ways to use this program.

While assessment activities centering on the teaching and learning process are helpful at various points in the undergraduate experience, a more challenging application lies in making connections between general education and the academic major. In a collegiate institution, the nature of these connections is an important measure of the extent to which the environment is organized for learning. The more assessment is at the heart of the institution itself—the classroom—the more its power can serve students.

Recommendations

35. **Benchmarks of Achievement.** *Benchmarks of achievement shall be identified and related to students' objectives. (This recommendation applies particularly, although not exclusively, to community colleges.)*

36. **Outcomes Assessment.** *Each institution, in relation to its mission, shall identify measures (such as performance on licensing examinations, transfer success, job placement, learning outcomes) to demonstrate how its students benefit from their undergraduate experience.*

37. **Use of Assessment to Improve Teaching and Learning.** *Each institution shall use the results of its various assessment mechanisms to improve teaching and learning.*

PROFESSIONAL DEVELOPMENT INITIATIVES

Faculty are engaged, to differing degrees and in differing ways, in teaching, research, and public service. In its broadest sense, faculty development has as its objective assisting faculty to do even better work than they currently do in any or all of these areas. In a recent article (Menges et al., 1988), the breadth of the term is captured: "the theory and practice of facilitating improved faculty performance in a variety of domains, including the intellectual, the institutional, the personal, the social, and the pedagogical."

Bland and Schmitz, in a 1988 literature review on the topic of faculty development at universities, four-year colleges, and professional schools, traced its origin to the improvement of the instructional skills of individual faculty. Over the years, they noted that its scope has expanded: "Today's development questions ask not simply how to improve one faculty member's teaching skills but how to revitalize tenured-in departments as a whole, how to create entirely new career options for faculty, how to reformulate the curriculum to attract new student populations, and how to keep the institution alive and competitive."

Faculty development, also known by such terms as faculty renewal, faculty vitality, and professional development, is being increasingly looked to as one means to respond to the call for improving quality and excellence in undergraduate education. For example, faculty must have the necessary skills and expertise before they can incorporate assessment of learning into their work and use the results to continue to improve teaching and learning. Faculty also must have the necessary skills and expertise to implement "across the curriculum" initiatives. Faculty must be sensitive to the needs and learning styles of a changed student population and must be informed of the best methods to instruct these students without negatively affecting standards. Indeed, the changed nature of today's student body has resulted in identifying academic advising skills as yet another subject appropriate for faculty development.

This expanded agenda for professional development has given rise to more broadly gauged initiatives, enlarging both the audience and the sponsoring parties. While activities targeted to individual faculty members remain, such as retraining, consultations about teaching, sabbaticals, and travel to professional meetings, they are now joined by seminars, symposia, and workshops, with faculty participants drawn broadly from within the institution or across institutions. There also is the growing recognition that campus administrators can benefit from participation in professional development activities. Institutional sponsorship or support is often supplemented by the public or private sectors. For example, federal support is available under several programs, such as the National Science Foundation's Undergraduate Faculty Enhancement Program. Under this initiative, grants are awarded for the development and implementation of ways to assist large numbers of science, engineering and mathematics faculty to: (1) learn new ideas and techniques in their fields; and (2) use the knowledge and experience to improve their undergraduate teaching abilities. Keeping current in a discipline and improved instructional skills, two principal development objectives, are thus targeted.

In the above-cited literature review of development activities, the authors selected 288 references covering the period 1965-1985. They found the most frequently mentioned strategies were workshops, sabbaticals and leaves, evaluation of faculty, and growth or professional development plans. Among the most frequently mentioned concerns were: the essential, critical link between faculty development and institutional mission and policies; the need to make faculty development an integral, ongoing, visible and important part of the institution; and the critical need for high-level and mid-level administrative support, which must be balanced with faculty ownership of the program and input into its design.

In Massachusetts, support for sabbaticals and travel to professional meetings has been supplemented by support for advanced coursework and degrees. Initiatives reflective of the expanded nature of

professional development and directed toward introducing campus personnel to the current wave of innovations in undergraduate education also are occurring. During this past year, for example, one college held workshops on critical thinking. At another institution, a committee composed of faculty and administrators sponsored an all-day Teaching Quality Workshop, attended by both faculty and administrators. Workshop themes included: "Qualitative Assessment;" "Getting Student Feedback;" "Personalizing the Learning Environment;" and "Teaching Styles/Learning Styles: Personality Type in the Classroom." The committee subsequently hosted an all-day meeting on faculty development for which approximately 100 faculty and administrators representing two-thirds of the state's public colleges and universities registered. The enthusiastic response to this latter initiative has led to the formal establishment of the Massachusetts Faculty Development Consortium.

These activities, which received grant support from the Board of Regents, were campus-based initiatives. Funding for professional development comes from various sources, including current collective bargaining contracts, and institutions have exhibited an entrepreneurial spirit as they seek to expand their resource base. Federal funding, alumni donations, and trust fund accounts all have been tapped. Nor has the business community been overlooked. One institution, for instance, hopes to expand its relationship with neighboring high technology companies to include periodic state-of-the-art updates for its faculty. Many public institutions have established, or are in the process of creating, centers for professional development. One college plans a center to promote departmental and interdisciplinary efforts in instructional development and innovation. The major objective of these centers is the improvement of teaching, and the institutionalization of professional development reflects the role that it has assumed in improving higher education.

The Board of Regents not only seeks to obtain and direct additional funds in support of development activities but also actively engages in promoting cooperation among the institutions on behalf of such initiatives. Recent Board-sponsored statewide reviews in Business and Computer Science cited the need for increased development opportunities for faculty, particularly for advanced instruction or degrees. Discussions are occurring with the University of Lowell and the University of Massachusetts to explore expanding their role in meeting the educational needs of public sector faculty.

Recognition of the linkage between an educated work force and a healthy economy has led to the creation of state initiatives that supplement the activities occurring within the higher education community. The Bay State Skills Corporation, which acts as a financial catalyst uniting industry and education in preparing today's faculty and work force for the jobs of tomorrow, recently sponsored a series of summer workshops to provide faculty the opportunity to exchange information on emerging technologies. The short-term, full-day workshops concentrated on topics of high growth and emerging technologies basic to Massachusetts industries; involved participation of private companies in their design, instruction, or implementation; combined classroom instruction and hands-on experience; and focused on the development and formatting of new curricula.

While professional development activities should be well funded, faculty also have a responsibility for self-development. Faculty need to remain current in their field, because the "what" of teaching is at least as important as the "how." Among the funded mechanisms to accomplish this objective are paid leaves, travel to professional meetings, and tuition waiver for advanced coursework. There are, in addition, such self-development activities as reading relevant books and journals and obtaining copies of unpublished papers read at professional meetings. Much expertise exists within the Commonwealth's public colleges and universities and better ways should be found for utilizing and disseminating it. The need also exists for better publicizing opportunities for professional development and for disseminating, as appropriate, the results of professional development activities.

Recommendations

38. **Comprehensive Program of Professional Development.** *Each public institution should have for its faculty, administrators, and professional staff a comprehensive program of professional development to strengthen and enhance the undergraduate experience. At a minimum, the program should:*

    Stress the importance of keeping current in a discipline;

    Promote the improvement of teaching and the use of technology in the teaching and learning environment;

    Be responsive to the mission and clientele of the institution, addressing, as appropriate, the teaching, research, and public service roles;

    Be designed and funded as a result of discussions and consultations with faculty, administrators and, professional staff;

    Incorporate individual and broadly-based initiatives; and

    Include mechanisms to assess the effectiveness of activities in benefitting both the individual and the institution and to disseminate, as appropriate, the results of those activities.

39. **Support for Professional Development.** *The Board of Regents should intensify its efforts in support of professional development and seek ways to promote among the public institutions cooperation and collaboration in this area.*

40. **State Database and Clearinghouse.** *Board of Regents staff should assess the feasibility of: establishing a state database identifying faculty by their areas of expertise; and utilizing the recently established Massachusetts Faculty Development Consortium as a clearinghouse for professional development opportunities.*

TECHNOLOGY IN THE CLASSROOM

Ernest Boyer (1987) has observed that, until the transformation in computer use, the previous technology revolutions bypassed educational institutions:

> If we look back, technology revolutions have come and gone because the hardware has been better than the content. Consider instructional television. Programs of twenty years ago were little more than "talking heads" that offered the worst features of classroom teaching and none of the excitement of the new medium. Further, technology revolutions bypassed education because teachers were bypassed in the process.

He wryly noted that perhaps the only technology tool that caught on—"beyond the chalkboard"—was the overhead projector.

Boyer remained cautious in conceding "revolutionary" status to the computer in education. While he may be overly skeptical of the impact of previous technological advances on education, it is nonetheless apparent that the climate for information technologies is far more receptive today on campuses and among policymakers. This is due in part to projects which have demonstrated over the last thirty years the efficacy within the educational setting of various technological advances. A sampling includes the use of closed-circuit television in medical schools to allow students to see close-ups of medical procedures; the early use of television tapes in biology learning laboratories; and continuing education programs that broadcast courses over commercial stations. It is due as well to the nature of newer technological achievements such as the microcomputer and videocassette recorder (VCR) which, far from esoteric toys, have become part of our daily lives. Indeed, there is a growing commitment among educators to use technology advances simply because the world of life and work demand knowledge of, and exposure to, them.

The development of the VCR breathed new life into the use of television in educational institutions. The VCR, freed from broadcast schedules, portable, and capable of use without the assistance of a specialist, allows faculty to enrich the presentation of instructional material to students both within and outside the classroom setting. It also is a tool increasingly used to assist faculty in improving instructional techniques.

As important as the VCR has proven to be to the educational process, its impact and contribution pale in comparison to that of the computer. The computer's value in the instructional, research, and administrative areas grows daily as improvements reduce cost and expand usage and application. From word processing to computer-assisted instruction, from on-line library networks and electronic card catalogues to software which allows students to visualize abstract phenomena and to manipulate variables and observe their effects, the computer has given students a unique resource with the demonstrated potential to enrich greatly the education they receive while at the same time assist them in the process. For instance, one of the benefits of the computer in business programs is the opportunity it provides students to tackle more complicated, realistic problems, using linear programming and other sophisticated analytical techniques that were not previously feasible. The marvel of word processing not only can be an aid to faculty, as for example in the quality of the product students submit, but also can contribute to our knowledge of the learning process. One professor noted that, because of word processors, "our understanding of the way people write—the stages, the process—has changed. The phase of writing that is actually more important is revision. Yet how much time does the poor student give to revision?" This individual went on to recall a comment from one student's journal: "The computer makes revision a playground instead of a punishment" (E. Boyer, 1987).

Using the computer to better understand the ways in which students learn is the factor that tilts the benefits/risks balance "even more decisively" in favor of the new technology, according to Derek Bok

(1986a). The great interest investigators have shown in experimenting with computers to improve the learning process has enlivened the field of child learning and turned the energies of many towards artificial intelligence and its application to learning. After describing corporate encouragement of this research, the faculty's growing computer proficiency and nascent use of computers to improve their courses, and student expectations that technology will be used in teaching, he concluded:

> This growing interest in many quarters may well be the greatest educational benefit of the new technology. As more people begin to use technology in the classroom, they are bound to think more carefully about the best ways to help students absorb new knowledge and master new intellectual skills. One simply cannot produce good software for teaching without paying close attention to the details of how to present the material to enhance learning and sustain student interest. This is not characteristic of traditional instruction.

While the number of computers on campuses continues to grow, cautionary notes concerning the use of technological learning resources abound. Ernest Boyer (1987), for instance, worried that campus computer centers operate in isolation, that libraries are often directed with no connection to other learning institutions on the campus, and that most classrooms do not yet integrate the resources of these facilities. He identified the challenge as one of building connections, linking technology to the library, to the classroom, and ultimately to college goals. The National Institute of Education's 1984 report voiced concern about any technology that has the potential of reducing significant intellectual contact between students and faculty and of removing the "passion from learning." It called upon administrators and faculty to plan more carefully for the introduction and application of learning technologies in order to enhance the quality of undergraduate learning and to foster interaction between students and faculty, and among students. The American Association of Community and Junior Colleges, in *Building Communities: A Vision for a New Century: A Report of the Commission on the Future of Community Colleges*, observed that the marvels of today's technology cannot make value judgments, cannot teach students wisdom: "That is the mission of the faculty, and the classroom must be a place where the switches are sometimes turned off. . . . The goal should be to use technology as a means, not an end."

The use of information technologies as a means rather than an end is highlighted in the recent call for Massachusetts public colleges and universities to submit Computing and Communications Master Plans to the Board of Regents. In the related document on the planning process, it was noted that the ends are contained in an institution's mission statement and are guided by the five-year institutional strategic plan. Accordingly, an institution's Computing and Communications Master Plan should be based on the academic and administrative needs of the campus and should be consistent with the campus strategic plan as well as with systemwide computing and communications guidelines.

The purpose of this planning initiative is to ensure that the limited resources available are used effectively in meeting institutionally determined academic and administrative needs. This emphasis on cost effectiveness through better planning is timely. The broad-range impact of the information technologies on all phases of campus life and the significant fiscal investment that they demand provide a compelling rationale for a more formal planning process for "thinking through" future needs and priorities on an institutional and systemwide basis.

The Regents Computer Network (RCN), a component of the Board of Regents, is the largest computing and communications resource available to every public campus in the Commonwealth. Since 1973, it has provided administrative and academic computer support to the state colleges. With the installation of the Higher Education Communications Network in 1987, the RCN and its resources became available to the community colleges and the state universities as well. Those resources include electronic mail, the power of multiple computers, and a wide array of academic and administrative applications software. The RCN's user support staff provides consulting, training, and documentation.

Recommendations

41. **Improved Access to Equipment.** *Continued effort should be directed toward improving access by the campus community to computers and software, and to other needed equipment incorporating current technology.*

42. **Sharing Information.** *Board of Regents' staff should explore ways to enhance sharing among faculty the benefits of technology advances.*

GRADUATE TEACHING ASSISTANTS

Graduate students can enrich the learning experience for undergraduate students. The most direct and visible vehicle is the teaching assistantship, which has become a critical component of institutional staffing, particularly at universities. At a lower cost and with no long-term commitment, teaching assistants supplement an institution's faculty, often being assigned to introductory courses. They also have been effective in teaching advanced topics which they recently had learned themselves. Another use of assistantships is to release faculty for activities such as course development or professional development. Care must be exercised to realize and maximize the potential contribution of teaching assistants to the undergraduate experience. Since they are frequently in contact with freshmen, in both the classroom and the laboratory, it is important that they have the requisite preparation and supervision.

The experience of one Massachusetts public university demonstrates the importance of teaching assistants to an institution's academic program. These students allowed the institution to sustain its level of instruction for the 35% increase in undergraduate enrollment experienced from the 1969-70 through the 1984-85 academic year with a smaller increase in faculty (21%). Because the number of teaching assistants rose by nearly 1,100, a 233% increase, the instructional contact of undergraduates actually increased.

Recommendations

43. **Preparation and Supervision of Teaching Assistants.** *Institutions have a responsibility to ensure that teaching assistants, as well as other non-regular instructional personnel, are capable of performing their assigned duties and receive necessary supervision. These individuals should receive appropriate training, including language and cultural preparation when needed.*

44. **Student Access to Faculty.** *Where classes are taught by teaching assistants, students should also have access to faculty for instruction, advisement, and career development.*

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